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CONTENTS

The Status of Rhododendron nudiflorum and R. roseum	1
Notes on Cultivated Labiates. 2. Mentha	3
Recent Introductions for California Gardens	12
Chromosome Counts in the Gesneriaceae	14
The Identity of the Aquatic "Banana Plant"	19
Hyacinthus azureus - not a Muscari	23
Conservation of the Name Rechsteineria	24
Crete Dittany and its relationships	30
Recent Books on Wildflowers - a Review	32

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Vol. 2 BAILEYA March 1954 No. 1

The Status of Rhododendron nudiflorum and R. roseum

G. H. M. Lawrence

From three sources in recent time have come requests for an explanation of the taxonomic situation as concerns these two native eastern North American azaleas. Popularly known as azaleas, they belong to the genus Rhododendron, and rhododendron specialists recognize them as members of the series Azalea, subseries Luteum. Rhododendron nudiflorum is the Pinxter Azalea and R. roseum is known as the Honeysuckle Azalea.

The first question is: do these represent two species, or are they two variants of a single species? For nearly a century they were quite universally accepted as two species; one (R. nudiflorum) occupying the Coastal Plain and areas of lower altitude, but extending across New York State and into southern Ohio, and the other (R. roseum) on higher uplands from Virginia northward and not found on the Coastal Plain. The late Professor K. M. Wiegand treated R. roseum as a variety of R. nudiflorum, commenting [in Wiegand & Eames, "The Flora of the Cayuga Lake Basin, New York," ed. 2, p. 333], "after an inspection of a large number of specimens it seems impossible to follow Rehder [in Wilson, E. H. and Rehder, A., "A Monograph of Azaleas "], since all the characters given by him as distinguishing R. nudiflorum from this plant [R. roseum] apparently break down. It is best, therefore, to treat the plant as a variety." Despite this statement of 1926, Rehder in 1940, Fernald in 1950, and Gleason in 1951 each treated the two as separate species.

Persons who have made extensive field studies of the two kinds in recent years have pointed out that they have the same chromosome number and that all members of the section having the same chromosome number interbreed. These observers report that where the two taxa occupy the same or adjoining areas, in a common ecological situation, there is some interbreeding. This results in the formation of genetically complex populations. However, it is emphasized that when a transect is followed from the Atlantic Coast in Virginia (where R. nudiflorum will be found) west to the top of the Blue Ridge mountains (where R. roseum is found),major elements of the two taxa will be recognizable by valid differentiating characters.

Intermediates between the two species do occur in nature. If known to have come from areas where the two merge (as on the slopes of the Blue Ridge in the example above or from across most of New York State and New England), hybridity may be responsible. If the apparent "blending" is represented by the presence of a marked glandularity in plants that have essentially odorless flowers, and are otherwise identifiable as R. nudiflorum, they may be the f. glandiferum of that species. It has been pointed out by Dr. Henry Skinner, who has studied the group intensively, that this form closely resembles R. canescens, a species that does not extend north of southern North Carolina and southeastern Tennessee, and that when the latter is reported from areas as far north as Delaware and Maryland, one may be reasonably certain that R. nudiflorum f. glandiferum has been misidentified as that species. Dr. Skinner also discredits the validity of the "corollas more intense pink" as a character of f. glandiferum.

The second question is: how does one tell the two apart? For convenience, the distinguishing characteristics of each are presented below in tabular form:

	R. nudiflorum	R. roseum
Buds:	glabrous or nearly so	gray-pubescent
Bud scales:	abruptly acuminate	obtuse to mucronulate
Leaf color:	bright green above	blue-green above
Flowers:	odorless	very fragrant, spicy
Pedicels:	lacking pin-head glands	with pin-head glands amongst the hairs
Corolla tube:	longer than the lobes	about as long as lobes or shorter
Filaments:	3 times as long as corolla tube	2 times as long as corolla-tube
Capsule:	setose, without glands	setose, with glands

Bowers ["Rhododendrons and Azaleas," 1936, p. 219] described the fragrance of the flowers of R. nudiflorum as "sickly sweet" and of R. roseum as "spicy, clove-like." This appears to be an error based perhaps on observation of hybrid material, as is his statement [p. 218] that "the two species cover practically the same range...." Field experience and the extensive literature provide abundant evidence that the flowers of R. nudiflorum usually lack appreciable fragrance and in their older distribution areas the distinctness in range and ecology of the two is marked.

In view of these opinions and situation, it is to be expected that the Pinxter Azalea and the Honeysuckle Azalea will be treated as two species in "Hortus III."

Notes on Cultivated Labiates.
2. Mentha

Gordon P. De Wolf

"There are as many varieties of mint, "says a ninth-century writer," as there are sparks from Vulcan's furnace..."(Freeman)

The genus Mentha is taxonomically a most perplexing group of cultivated plants. This situation arises principally from its long history in cultivation and its propensity for hybridization. In the past there has been a tendency by students, as in many similar genera, to recognize every individual variation (in effect, nearly every recognizable clone) as a distinct species. This has resulted in an almost hopeless multiplication of names, so that now, in a genus with about 25 species, there are more than 600 specific names. Most of these names can be reduced to synonymy with 4 of the species of Europe.

As at present understood, Mentha has a wide distribution in the Old World, with some 9 species in the region of Australia and New Zealand, and 6 species widely ranging in Europe - 2 or 3 of these with varieties in eastern and southern Asia. In addition, several of the European species have become more or less common the world over as escapes from cultivation. It is these European species which are involved in most of our difficulties.

As with many similar genera, the situation, while difficult taxonomically and complex nomenclaturally, is quite easy of explanation. Four of the 6 European species of Mentha hybridize among themselves freely, in addition to propagating readily by vegetative means. In this fashion a great multitude of clonal complexes has been built up, each clonal complex having relatively stable, though generally minute, differences from its relatives. In the past, many authors, acquainted only with their local flora and ignorant of the variation of the genus and the species involved as a group, have unfortunately sought to recognize these clonal variations as species. Beginning with George Bentham in 1832, there has been a series of attempts to bring the taxonomy of this group into line with that of other groups. The most successful attempt was that of John Briquet at Geneva, Switzerland, writing in "Die Natürlichen Pflanzenfamilien" of Engler and Prantl (1897).

Fig. 1. Mentha Requienii, x 2/3.

In so far as cultivation in this country is concerned, we may ignore the species of Australasia, interesting as they may be, and concentrate our attention on the European species. Mentha Requienii (Bentham (fig. 1) and M. Pulegium Linnæus (fig. 2) are rather distinct species, seemingly not involved in the general problem. Mentha Requienii, the Corsican Mint, is frequently cultivated in this country, particularly in the greenhouse. It is a useful rock-garden subject (being a tiny, prostrate creeper with the flowers borne in few-flowered verticils in the axils of foliage leaves) though it probably is not reliably hardy north of Philadelphia. It has the odor of Pennyroyal. Mentha Pulegium, the Pennyroyal, appears to be more widely cultivated. It is rather distinct in habit, tending to be open and diffusely branched, and decumbent from a more or less woody crown. There is some variation in the size of the small ovate or suborbicular leaves. Pennyroyal is a widespread plant occurring naturally in much of central Europe and the circum-Mediterranean region. The specific epithet, a name used for this plant by some of the old herbalists, is compounded from the Latin "pulex" - a flea, and "agere" - to drive, in reference to its reputed property of repelling fleas, for which purpose the fresh flowers were burned, presumably forming a sort of smudge. It has been also reputed to purify stagnant water and to be useful as a sea-sickness remedy.

Pennyroyal was an ingredient of the so-called "Mithridatic Antidote," or "Electuarium Mithridaticum," a cure for all kinds of poisons. The formula for this compound varied with the various authorities of antiquity, but it seems probable that it was always based on the use of opium. One suspects that as a cure for poisoning it may have left something to be desired, but as insurance of a relatively painless death one can imagine few more potent agents.

A related species, Mentha Gattefossei Maire (fig. 2B) has recently been introduced into cultivation in this country. This is a small, more or less erect plant, probably not more than 3 dm. tall. It has an inflorescence similar to that of M. Pulegium, but much shorter. The leaves are linear to linear-lanceolate, entire or toothed. It comes from Morocco.

The remaining species and hybrids which concern us are generally divided into three series on the basis of the character of the inflorescence: a "spicate" series, including M. rotundifolia, M. longifolia, M. X spicata, and M. X piperita; a "capitate" series, including M. aquatica; and a "verticillate" series, including M. arven-

sis. Hybrids between and within all of these series exist, thus confusing an essentially simple picture.

Mentha rotundifolia Linnæus (fig. 3A) is a species of central Europe, characterized specifically by its sessile, ovate to sub-rotund leaves. The leaves are generally conspicuously net-veined, in contrast to the leaves in the rest of the species which are conspicuously pinnately veined. This is a noticeably pubescent species, the lower surfaces of the leaves being conspicuously tomentose in most forms. I have not been able to detect the branching nature of the individual hairs said to be characteristic of this species. This is commonly called Apple Mint, Wooly Mint, or Round-leaved Mint. A variegated form is in the trade and is sometimes called Pineapple Mint.

Mentha longifolia (Linnæus) Hudson (fig. 3B) differs from M. rotundifolia in its lanceolate, conspicuously pinnately veined leaves. This is an extremely variable taxon, the last authority of the group, John Briquet, having recognized some 21 subspecies and more than 150 varieties. I recognize this species principally by the presence of a more or less heavy pubescence. In one direction it grades into M. X spicata, in another into M. rotundifolia, and in a third into a form that has in the past been segrated as a species, M. tomentosa D'Urville. This last form, however, cannot be well separated from similar forms of M. longifolia, and therefore is not recognized here. Most forms in cultivation as M. tomentosa are typical M.

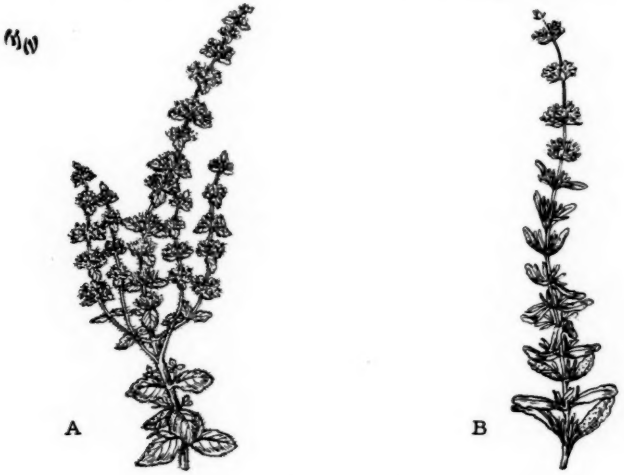

Fig. 2. A, Mentha Pulegium x 1/3. B, Mentha Gattefossei, x 1/3.

longifolia. There is considerable variation in the characters of the inflorescence in this taxon. Typically the inflorescence is rather short and compact, but in extreme forms the verticils become distinctly distant. Mentha rotundifolia and M. longifolia do not seem to be used to any great extent in this country, though they are reputed to be useful wherever Spearmint is used, and particularly for the production of candied mint leaves. Mentha longifolia is supposed to be the "mint" of the New Testament (Matthew 23: 23 and Luke 11: 42).

Mentha X spicata Linnæus (fig. 4A) is reputed to be a hybrid between M. longifolia and M. rotundifolia. Cytological evidence suggests that the situation is not quite so simple as this, but no other convincing parentage has been suggested. Within this taxon there is great variability with regard to the sterility or fertility of the various clones, with regard to chromosome numbers and with regard to the amount of volatile oil. Plants of typical clones of M. X spicata are almost entirely glabrous. This is the Spearmint, Green Mint, Brown Mint or Lamb Mint, familiar in every country garden, grown by many whose only herbs are "mint" and "catnip." It is used as a flavoring in cooking, particularly with vegetables, a soothing tea is brewed from the leaves, and, placed in grain bins, it is reputed to keep away rats. In New England, at least, it is used in summer, the leaves and young stems being ground up in vinegar

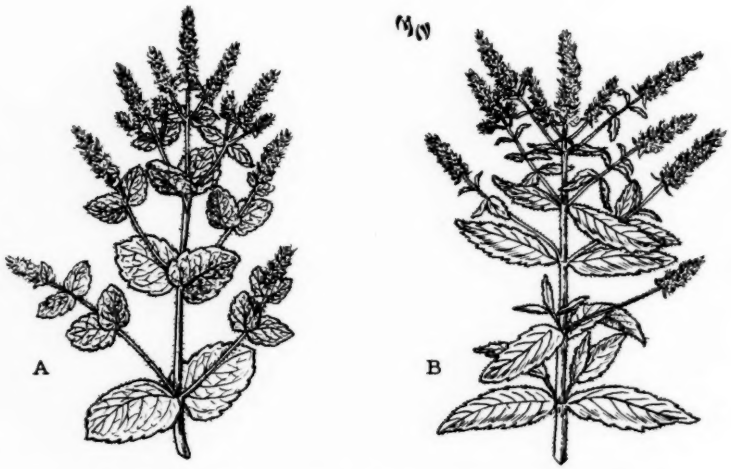

Fig. 3. A, Mentha rotundifolia, x 1/3. B, Mentha longifolia, x 1/4.

with vast quantities of sugar added to make a savory sauce for use with roast lamb. For winter use a mint-flavored apple jelly is commonly prepared - or used to be in the days when a housewife was judged by her cooking ability and not by her dexterity with a can-opener. In the South, Spearmint is used in the preparation of the mint julep, a mixture somewhat similar in its effects to the Mithridatic Antidote noted above, but with an alcoholic base. Also in the South, a strong syrup flavored with this herb is poured over cracked ice to form one sort of "snow-ball," a summertime treat much favored by children. Commercially, selected clones of Spearmint are grown in the Middle West for the distillation of the volatile oil, which finds a place in the pharmacopoeia, and as a flavoring for various candies. Some clones are highly susceptible to a rust. According to a recent study, some clones of M. X gentilis, a reputed hybrid between M. X spicata and M. arvensis, are replacing M. X spicata in the commercial production of oil of Spearmint.

Mentha X piperita Linnæus (fig. 4B), the Peppermint, is reputed to be a hybrid between M. X spicata and M. aquatica. Plants morphologically similar to this taxon have been produced experimentally from this parentage, but the type of volatile oil was inferior to that of the cultivated strains. This taxon resembles M. X spicata rather closely, differing only in the relatively long-petiolate leaves and in the generally somewhat broader inflorescence. Like M. X spicata, clones of this taxon are cultivated for the production of the

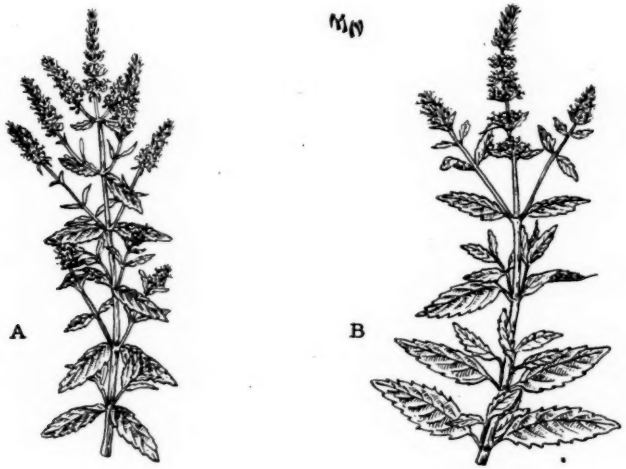

Fig. 4. A, Mentha spicata, x 1/4. B, Mentha piperita, x 1/4.

Fig. 5. Mentha gentilis, x 1/4.

volatile oil. The nomenclature of the cultivars has become most complex, and it seems best to treat them as fancy-named clones.

Mentha X gentilis Linnæus (M. X cardiaca Baker) (fig. 5), noted above, is a very variable concept, some phases of which seem to be almost indistinguishable from M. arvensis. Its only interest for us is in its substitution for M. X spicata noted above - when it is called Scotch Mint.

Mentha aquatica Linnæus (fig. 6A), the Water Mint, in its typical form is a rather pubescent plant with petiolate, lanceolate to cordate leaves. The inflorescence is verticillate, short and broad, forming a sort of "head," typically with the lowermost verticil somewhat distant from the rest of the inflorescence. Mentha citrata Ehrhart, the Bergamot or Lemon Mint, is probably only a glabrous form of this species.

Mentha arvensis Linnæus (fig. 6B), the Field Mint, is a typically more or less glabrescent plant without a distinct inflorescence, the verticils being borne in the axils of foliage leaves on the upper portion of the stem. Mentha arvensis and M. aquatica are said to cross, the progeny of this parentage being extremely variable, though tending to resemble M. arvensis. The wild mint of America, formerly set off as a distinct species, M. canadensis Linnæus, is now considered to be only a variety of M. arvensis. This American variant is quite variable, in general having more lanceolate leaves which are frequently somewhat reduced in the "inflorescence." There are also forms which differ in being more or less heavily pubescent.

The Japanese Mint (M. arvensis L. var. piperescens) superficially looks like an overgrown M. arvensis. Cytological evidence indicates, however, that it is a high-numbered polyploid. Further, it does not breed true from seed. This would seem to indicate that it is a clonal form. The plant is important because of its high menthol production, for which it is extensively grown in Japan, whence it came, and elsewhere. The author of the varietal name is variously given as Holmes, Malinvaud, or Briquet. I cannot find that any of them have published the name as a variety - though Holmes did indicate it as a forma. Any further information concerning this would be greatly appreciated.

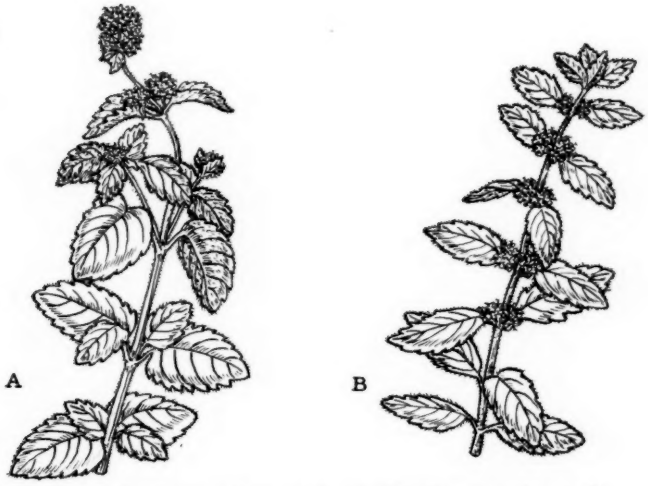

Fig. 6. A, Mentha aquatica, x 1/3. B, Mentha arvensis, x 1/3.

Cristate forms, variously known in the trade as "cristata" or "crispata," appear to represent chance mutant clones from several, perhaps all, of the cultivated mints. Their sure identification can be made only with flowering material. According to Bentham, the M. crispa of Linnæus was a form of M. aquatica. In the trade in this country, cristate forms of M. X spicata frequently go under this name. Similarly, variegated-leaved forms seem to be relatively common. In some taxa - e.g., M. rotundifolia and M. aquatica (M. citrata) - these forms may be more common in cultivation than the typical species.

The following key may be useful in identifying the cultivated mints.

1. Inflorescence distinct from the leafy portion of the stem.
   2. Verticils all distant.
      3. Leaves ovate to suborbicular, to 2.5 cm. long..M. Pulegium
      3. Leaves lanceolate to elliptic-lanceolate, more than 2.5 cm. long. . . . . M. longifolia
   2. Verticils not all distant.
      4. Inflorescence an elongate raceme.
         5. Leaves of stem linear. . . . . .M. Gattefossii

5. Leaves of stem lanceolate to ovate.
   6. Bracts of the verticils small, not or hardly exceeding the corolla.
      7. Leaves of stem sessile or only short (to 3 mm.)-petiolate.
         8. Leaves ovate, obtuse or apiculate. . . . . M. rotundifolia
         8. Leaves ovate-lanceolate, acute.
            9. Plants conspicuously pubescent. . . . . M. longifolia
            9. Plants nearly or quite glabrous. . . . . M. X spicata
      7. Leaves of stem with conspicuous (12-20 mm.) petioles. . . . . M. X piperita
   6. Bracts of the verticils 2 - 3 times as long as the corolla, leaf-like. . . . . M. X gentilis
4. Inflorescence a short, broad, capitate raceme.. M. aquatica

1. Inflorescence not distinct from the leafy portion of the stem, the verticils standing in the axils of typical, or only slightly reduced, foliage leaves, and distant.
   10. Plant prostrate, leaves 9 - 13 mm. long. . . . . M. Requienii
   10. Plant erect, leaves mostly 5 cm. or more long. . . . M. arvensis

The following is a list of the names used herein, and other listed or synonymous names used in "Hortus Second." Valid names are underscored.

Mentha

anisata: listed name of unknown standing
aquatica L.
arvensis L.
austriaca Jacquin: arvensis
canadensis L.: arvensis, var.
X cardiaca Baker: X gentilis
Cataria Hort.: Nepeta Cataria L.
citriodora: listed name of unknown standing
citrata Ehrhart: aquatica
crispa: according to George Bentham ("Labiatarum Genera et Species," 1832) the M. crispa of Linnæus was a form of M. aquatica. However, crisped-leaved variants seem to be relatively common in many of the cultivated species of the genus, particularly so in M. aquatica and M. X spicata.
Gattefossei Maire
X gentilis L.

gibraltiaca Willdenow: Pulegium, var.
lanata (Piper) Rydberg: arvensis, forma
longifolia (L.) Hudson
X niliaca Jacquin em. Briquet: longifolia. Reputed to be a hybrid between M. rotundifolia and either M. X spicata or M. longifolia.
X piperita L.
Pulegium L.
Requienii Benth.
rotundifolia L.
X spicata L.
sylvestris L.: longifolia
tomentosa D'Urville: longifolia
viridis L.: X spicata

SYNONYMS AND HOMONYMS

The new International Code of Nomenclature for Cultivated Plants is becoming more widely known, and some horticulturists using it are finding a few terms whose meaning and significance are unappreciated. Two such terms, "synonym" and "homonym," deserve explanation here. They are as applicable to vernacularly named cultigens as to those having Latin names.

In 1796 William Curtis, author and publisher of the now renowned "Botanical Magazine" - the oldest continuously published botanical or horticultural magazine - described and figured a Monkey-flower under the name Mimulus aurantiacus. That represents the first publication of the name of this Californian plant. (Incidentally, Curtis noted that it was first flowered that year by a Mr. Colvill, a London nurseryman, adding, "We know not with certainty of what country it is a native." One wonders how this Pacific coast plant reached England so early.) Two years later, Wendland described the same species as Mimulus glutinosus. This second name is a synonym.

In 1828 Seringe described an Evening-primrose as Oenothera Lamarckiana. Three-quarters of a century later, DeVries (probably unaware of Seringe's plant and name) described a very different plant as Oenothera Lamarckiana. Here, one finds two different plants passing under the same name. Seringe's plant retains the name he gave it. The name Oenothera Lamarckiana of DeVries is a later homonym and, according to the Code of Nomenclature, a later homonym is an illegitimate name and may not be retained. Because of this, DeVries' Evening-primrose is now known properly as Oenothera erythrosepala, a name given it by Borbas in 1903.

G. H. M. L.

Recent Introductions for California Gardens

G. H. M. Lawrence

Of the scores of new catalogues received and indexed at the Bailey Hortorium each month, some are gems for the excellence of their printing and illustrations, some for the completeness of species or varietal representation of a particular genus or cultural group, and some for the unusual plants offered. This article deals with one of the last type.

Surprisingly, few sources offer many species new to cultivation (i.e., new even for this country) and the appearance of a genus not offered heretofore is noteworthy. Recently there has been received a three-page mimeographed list of 42 genera and 87 species, "plants grown from seeds obtained from areas having climatic conditions resembling those of Southern California, and characterized by moderate frost tolerance [and] low water requirements." From this modest but select list are noted the names of 2 genera and 17 species not known to have been offered previously to the American trade. Two other genera are offered for what is believed to be the first time in over 20 years. The list is published by a well-known Los Angeles physician and dermatologist, Dr. Samuel Ayers, Jr. (2007 Wilshire Blvd., Los Angeles 4, Calif.), whose avocation is horticulture. His hobby has led him to the Southern Hemisphere in search of new plants for Southern California gardens. These plants have been grown primarily for sale to other nurseries, but recognition is given here to the interest and energies of the introducer. The "new" plants are cited below, with some notes on their characteristics.

The two genera offered in America for apparently the first time are represented by Cussonia paniculata and Phymatocarpus porphyrocephalus. The listing of Smogdingium argutum and Viminaria denuda represents the first time these genera are known to have been offered since 1930. Likewise, one species, Dianella lævis, has not been listed in Hortorium records since 1930 although 4 other species of the genus are in the trade.

Cussonia paniculata (Araliaceæ), native to South Africa, is an evergreen shrub about 3 m. high, with palmately compound, long-petiolate, leathery leaves of 7-11 leaflets, each leaflet about 1.5-3.0 dm. long, entire to coarsely and deeply pinnately divided, the

segments apiculate. The flowers are white (sometimes reported as yellow), sessile in dense spikes which are about 5 cm. long and disposed in a panicle supported by a stout, leafless axis. In the Transvaal it is known as Cork tree. The species was first described by Ecklon & Zeyher in 1836. The genus name commemorates Dr. Peter Cusson (1727-1785), physician and one-time Professor of Botany at the University of Montpelier, France.

Phymatocarpus porphyrocephalus (Myrtaceæ), native to open lands of the Murchison river region of West Australia, is described as an evergreen shrub about 1 m. high, with short-petioled, ovate to suborbicular leaves about 3.5 cm. long, hairy but soon becoming glabrous. The flowers are very small and congested in more or less globose heads 1.2 - 2.0 cm. in diameter. The stamens are numerous, exserted and have purplish filaments and tiny yellow anthers. The generic name alludes to the tumor-like fruit, and the specific epithet to the purple coloration of the inflorescence. The genus and species were described by Ferdinand von Mueller in 1862. Neither appears ever to have been illustrated in botanical literature and this introduction by Dr. Ayers is the first record known to me of the plant's having been cultivated. No specimen of the genus, from the wild or from gardens, is in the Bailey Hortorium herbarium.

Descriptive accounts of the reintroductions, Dianella lævis (Liliaceæ), Smogdingium argutum (Anacardiaceæ), and Viminaria denuda (Leguminosæ), may be found in Bailey's "Standard Cyclopedia of Horticulture."

The newly introduced species of genera already represented in cultivation are:

Name	Family	Nativity	Mature Height	Flower Color
Acacia Brownii	(Leguminosæ)	Australia	6 dm.	yellow
Acacia glandulicarpa		Australia	2-3 m.	orange-yellow
Acacia glaucoptera		Australia	2.6 m.	orange-yellow
Acacia gnidium		Australia	5 m.	orange-yellow
Acacia Howittii		Australia	2.6 m.	
Aloe petricola	(Liliaceæ)	So. Africa	1 m.	orange & red
Aloe Reitzii		So. Africa	2.6 m.	orange-red
Calothamnus villosus	(Myrtaceæ)	Australia		
Ehretia hottentotica	(Boraginaceæ)	So. Africa	1.8 m.	red
Eucalyptus Woodwardii	(Myrtaceæ)	Australia	15 m.	yellow
Lampranthus amoenus	(Aizoaceæ)	So. Africa	1 m.	mauve-purple
Tristania lactiflua	(Myrtaceæ)	Australia	10 m.	white

The two species of Aloe (pronounced ál-oh-ee) are of comparatively recent discovery. Aloe petricola was discovered and named by Pole-Evans in 1917 and has flowers dull red in bud, changing to

[continued on page 36]

Some Chromosome Counts in the Gesneriaceæ

Owen M. Rogers
Department of Floriculture, Cornell

The current enthusiasm exhibited by both amateur and professional for Saintpaulia has naturally led to an increased interest in several other members of the Gesneriaceæ. Achimenes, Episcia, Sinningia (commonly called Gloxinia) and others are now the subjects of frequent articles and advertising in horticultural magazines. With the present surge of interest in this family, taxonomic, breeding, and physiological problems have been exposed.

Concomitant with the taxonomic study of the cultivated species of the Gesneriaceæ conducted at the Bailey Hortorium, a cytological study was initiated of which the first component was the determining of chromosome numbers of representatives of the family in the greenhouse collection at Cornell University. This is a report of the initial results of these chromosome determinations. In addition to the results of this study, chromosome counts recorded in the literature have been included. Herbarium specimens of the specific plants from which counts were made in this study are filed at the Bailey Hortorium.

All chromosome counts made during the present investigation were from somatic cells obtained from root-tip smears. The severed root-tips were pretreated two to four hours in a saturated aqueous solution of paradichlorobenzene. Killing and fixation were accomplished by an overnight treatment in a modified Carnoy's solution. The roots were then treated for ten minutes in a 50/50 solution of concentrated hydrochloric acid and 95 percent alcohol and returned to Carnoy's solution. The tip portion was then smeared in a drop of aceto-orcein.

The following table combines the results of this study with the chromosome counts recorded in the literature. Species names are listed alphabetically under the subfamilies and tribes to which they belong. All chromosome counts have been converted, when necessary, to the 2n or somatic number. Wherever possible, the source of the count is given in the third column: S indicating a sporocyte determination and R signifying a count from root tip tissue. Counts determined in this present study are distinguished by an asterisk (*).

SPECIES	SOMATIC CHROMOSOME NUMBER		REFERENCE
Cyrtandroideæ (Subfamily)			
Ramondieæ (Tribe)			
Ramonda Nathaliæ	36	S	Glisic 1924 (cited by Tischler 1927)
Ramonda serbica	72	S	"
Saintpaulia Grotei	30		Cox and Roberts 1950
Saintpaulia Grotei	30	R	Wilson 1951
Saintpaulia ionantha (refuted by Wilson; see below)	28	S	Sugiura 1936
Saintpaulia ionantha	30	R	Wilson 1951
cv. 'Blue Boy'	30	S, R	"
cv. 'Blue Girl'	30	R	"
cv. 'White Lady'	30	S	"
cv. 'Plum'	30	S, R	"
cv. 'Double' (no other designation given)	30	R	"
cv. 'Pink Beauty'	30	R	"
cv. 'Blush'	30	S, R	"
cv. 'Blue Leatherneck'	30	S	"
cv. 'Storm King'	30	S	"
cv. 'Blue Amazon'	60	R	"
cv. 'Pink Amazon'	30	R	"
Saintpaulia tongwensis	30	R	"
Didymocarpeæ (Tribe)			
Chirita lavandulacea (reported as Didymocarpus lavandulacea)	36	S	Sugiura 1940a
*Chirita lavandulacea[1]	34	R	
Didymocarpus tomentosus	54	S	Thathachar 1942
Streptocarpeæ (Tribe)			
Streptocarpus[2]			
caulescent species			
S. caulescens	30	S	Lawrence et al. 1939
S. Holstii	30	S	"
S. Kirkii	30	S	"
S. saxorum	30	R	"
acaulescent species			
S. Comptonii	32	S	Lawrence et al. 1939
S. cyaneus	32	R	"
S. Dunnii	32	S	"
S. Galpinii	32	S	"
S. Gardenii	32	R	"
S. gracilis	32	S	"
S. grandis	32	R	"
S. Haygarthii	32	S	"

1. This count differs from that previously reported in the literature. The original material was not checked.
2. Darlington and Janaki (1945) attribute counts for six additional species of Streptocarpus to Lawrence (Lawrence et al. 1939). These counts cannot be found in the original reference and have, therefore, not been included in this report.

S. insignis	32		Lawrence unp. (cited by Darlington 1945)
S. Michelmorei	32	S	Lawrence et al. 1939
S. Polackii	32		Lawrence unp. (cited by Darlington 1945)
S. polyanthus	32	S	Lawrence et al. 1939
S. Rexii	32	R	"
S. Saundersii	32	S	Sugiura 1940a
S. X Veitchii	32	S	Sugiura 1940
S. Wendlandii	32	S	Sugiura 1936; also Lawrence et al. 1939
S. Xkewensis X S. grandis	32,64		Lawrence unp. (cited by Darlington 1945)
Trichosporeæ (Tribe)			
*Aeschynanthus marmoratus	30	R	
*Aeschynanthus pulcher	60	R	
Beslerieæ (Tribe)			
Monophyllæa Horsfieldii	32	S	Oehlker 1922
Columneæ (Tribe)			
*Alloplectus domingensis	18	R	
*Columnea X Banksii (hybrid of C. Oerstediana X C. Schiedeana)	18	R	
*Columnea gloriosa	18	R	
*Columnea Schiedeana	18	R	
*Episcia cupreata	18	R	
*cv. 'Silver Sheen'	18	R	
*cv. 'Splendens' (Listed in the trade as E. splendens)	18	R	
*cv. 'Viridifolia' (listed in the trade as E. viridifolia)	18	R	
*Episcia fulgida	18	R	
*Episcia lilacina	18	R	
*Episcia lilacina (leaf variant listed as E. chontalensis)	18	R	
*Episcia punctata (listed as Drymonia spectabilis and Isoloma grandiflora)	18	R	
*Hypocyrta Nummularia	18	R	
*Nautilocalyx bullatus (listed in the trade as Episcia tessellata)	18	R	
*Nautilocalyx Lynchii	36	R	
Gesnerioideæ (Subfamily)			
Gloxinieæ (Tribe)			
*Gloxinia perennis	26	R	
Smithiantha zebrina (reported as Nægelia zebrina)	24	S	Sugiura 1936
*Smithiantha zebrina	24	R	
*Smithiantha cinnabarina (listed in the trade as Nægelia cinnabarina)	24	R	
Kohlerieæ (Tribe)			
*Kohleria spicata	26	R	
*Kohleria 'Eriantha Hybrid' (listed in the trade as Isoloma hirsutum)	26	R	
*Kohleria 'Sciadotydæa Hybrid'	26	R	

Sinningieæ (Tribe)			
Rechsteineria cardinalis (reported as Corytholoma cardinalis)	28	S	Sugiura 1936
Sinningia speciosa			
cv. 'Monarch'	56	S	Sugiura 1936
cv. 'Firefly'	56	S	"
*Sinningia speciosa (a cultivar)	26	R	
*Sinningia tubiflora (listed in the trade as Achimenes tubiflora)	28	R	

Few determinations of generic or even specific relationships within the Gesneriaceæ, based on chromosome identification, can be made at this time. This situation is caused by a number of factors, the most limiting being that of chromosome size. The chromosomes of the members of the Gesneriaceæ studied ranged in length from .95 microns in Smithiantha to 3.29 microns in Columnea, the smallest appearing as mere dots. Because of the small size, morphological differences among chromosomes were extremely difficult to ascertain. Individual chromosomes or chromosome pairs could be identified only in a few instances and then usually only in early metaphase. In many cases even the location of the centromere was not evident.

There are three main geographical centers of distribution of the Gesneriaceæ: Central and South America, Tropical Africa, and the Pacific region from China to Malaya, Borneo, and New Guinea. In addition there are representatives such as Ramonda and Haberlea native in the mountains of Southern Europe. There is no evident correlation between chromosome counts or base numbers and geographical distribution. If the members of the family are arranged in taxonomic tribes, the only striking cytological correlation noted is that all the members of the Columneæ investigated have the same base number (x = 9) although other correlations might become evident as more members of other tribes are investigated.

Polyploid series within genera are present in Aeschynanthus, Nautilocalyx, Ramonda, Saintpaulia, Sinningia, and Streptocarpus.

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The oldest horticultural magazine in the world, or at least that with the longest continuous publication, is "Curtis's Botanical Magazine," affectionately known to those who use it regularly as "Bot. Mag." First published in London in 1784, it is now in its 169th volume and is a serial more highly prized by ardent plantsmen and horticulturists than any other.

The "Botanical Magazine" is now published by the Royal Horticultural Society, London, and because of high publishing costs and relatively small circulation (it contains no advertising) a volume of four numbers comes out every two years - the numbers issued at six-month intervals. The subscription price is $11.20 a volume, a reasonable amount when one appreciates the contents.

Each number contains twelve full-page color plates of cultivated plants, each plate accompanied by a full description of the plant, its botanical and horticultural history, a discussion of its relationships to allied genera and species, and cultural notes. Black-and-white figures of floral details supplement the color plate. Each treatment is prepared by a competent authority, usually a staff member at Kew, Edinburgh, or the British Museum.

The "Botanical Magazine" is in need of acquiring new subscribers from the United States if it is to continue. It is a magazine without equal and should be read and studied by everyone interested in cultivated plants. If you cannot possess it personally, be sure your public library has it.

The Identity of the Aquatic "Banana Plant"

William J. Dress

The plants which are commonly grown to ornament fresh-water aquaria, particularly those of the tropical-fish fancier, form a large and varied group, one commercial supplier offering nearly 80 different sorts. As a cultivated group, they have received little attention from the taxonomist, however, and the botanical identity of many is generally unknown or questionable. Most of them, in fact, are known to growers and offered for sale only by makeshift trade names.

An interesting plant which falls into this category is frequently grown as the "underwater banana plant," a name given to it because of the resemblance, in miniature, of its basal cluster of tubers to a hand of bananas. As usually offered for sale, the plant consists of this cluster of greenish tubers below a short crown, from which arise a few to several cordate, suborbicular, rather long-stalked leaves which may be bright green or tinted with purplish red (fig. 7).

The recommendation is sometimes made that it be used as a floating plant in the aquarium, for then its most interesting feature, the cluster of banana-like tubers, is visible; treated thus, however, it does not long persist. If it is planted in soil or coarse sand in the bottom of the aquarium, cordlike roots develop from both the crown and from the tips of the tubers, followed by a succession of attractive submersed leaves, each larger than the last, until there are half a dozen or more. The blades, about 6 to 10 cm. in diameter, are olive-green; the leafstalks are dotted and roughened with tiny purple glands. If growth is vig-

Fig. 7. Nymphoides aquatica, young plant, x 2/3.

orous, the later leaves reach the surface of the water and float. These leaves are thicker and spongy in texture, nearly orbicular, green and smooth above, but purplish and densely pitted underneath. In nature they may reach 15 cm. in diameter but are considerably smaller in the aquarium. Flowers are rarely produced under aquarium conditions, but, in an indoor or outdoor pool with sufficient light, an umbel of several to many flowers develops near the summit of the leaf-stalk (evidence that the latter is actually a stem below that point), about 2 or 3 cm. below the leaf-blade (fig. 8). Each umbel gives a succession of small, white, short-lived flowers 1 or 2 cm. across and borne above the water on slender pedicels up to 8 cm. long. At the base of the umbel a cluster of short, thickened, blunt, tuberous roots frequently, though not always, develops. Upon the decay of the leaf, these float away and eventually sink, take root, and develop into a new plant.

The scientific name of this aquatic "banana plant" is Nymphoides aquatica (Walter) Kuntze. It may be found growing in ponds, open swamps, and slow-moving streams from Texas to Florida, north to New Jersey. According to the records of the Bailey Hortorium, it has never been offered for sale under its scientific name, though it is commonly grown and sold by aquatic-plant specialists under the trade name already mentioned. "Floating-heart" is the common name for most members of the genus, though "water-snowflake" is often used for the species having white flowers.

The genus Nymphoides belongs to the family Menyanthaceæ (subfamily Menyanthoideæ of the Gentianaceæ, according to some botanists), so it is a near relative of the bogbean, Menyanthes trifoliata L. It includes about 20 species, and is found on all the continents, chiefly in tropical and subtropical climates. One other species is native in the United States - N. cordata (Elliott) Fernald, a smaller and more delicate plant having a wider natural geographic range, from Newfoundland and Ontario to Louisiana and Florida. The

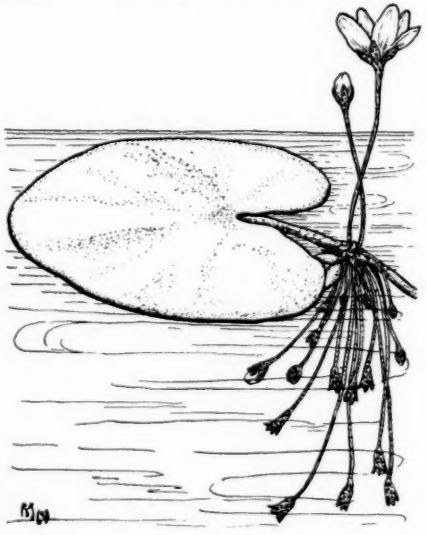

Fig. 8. Nymphoides aquatica, mature leaf & inflorescence x 2/3.

tubers in this species are more frequently produced, more slender, and more acuminately pointed than in N. aquatica, and though probably equally suitable for aquarium use, N. cordata seems not to be in the trade nor generally cultivated.

A few other species are sometimes grown as outdoor pool subjects, but are too coarse or vigorous for aquarium decoration. Nymphoides indica (L.) Kuntze, widely distributed naturally in Asia, Africa, and Australia, has white, fimbriate corollas and is the plant usually grown as "water-snowflake." The less common N. Humboldtiana (H. B. K.) Kuntze, from the American tropics, is similar. A yellow-flowered species native to Europe and Asia, N. peltata (Gmelin) Kuntze, is also frequently cultivated and has even become naturalized here and there in the United States. All are easily propagated vegetatively, for new plants form readily at the flowering nodes and may be separated as desired.

Species in this genus are rich in synonyms, and the cultivated sorts have their share. Although Nymphoides is the name now generally accepted for the genus, some species have in the past been lodged under other generic names. The gender of the name Nymphoides has been considered feminine by some botanists, and neuter by others. Though the name is a pre-Linnæan one, Hill (1756) was the first author to assign to it a descriptive or specific epithet indicative of its gender, and since he used the adjective "flava," he apparently considered Nymphoides to be feminine. In following his treatment, I follow also that of Fernald ("Gray's Manual of Botany," 1950) and Perry and Stearn ("The R. H. S. Dictionary of Gardening," 1951). The following finding-list includes only those names referable to the species herein mentioned and likely to be encountered in the trade or in horticultural literature. The valid names are underscored.

Nymphoides

aquatica (Walter) Kuntze
cordata (Elliott) Fernald
flava Hill: N. peltata
Humboldtiana (H. B. K.) Kuntze
indica (L.) Kuntze
lacunosa Fernald: As used by most authors, this name has referred to N. cordata. The basonym, Villarsia lacunosa Ventenat, however, is actually a synonym of N. aquatica.
nymphæoides Britton: N. peltata
peltata (Gmelin) Kuntze

Limnanthemum

aquaticum (Walter) Britton: N. aquatica
Humboldtianum (H. B. K.) Grisebach: N. Humboldtiana
indicum (L.) Thwaites: N. indica

Limnanthemum (continued)

la..unosum Grisebach: The notation following N. lacunosa applies to this name also.
Nymphoides (L.) Hoffmansegg and Link: N. peltata
peltatum Gmelin: N. peltata
trachyspermum (Michx.) Gray: N. aquatica

Villarsia

cordata Elliott: N. cordata
Humboldtiana H. B. K.: N. Humboldtiana
lacunosa Ventenat: N. aquatica, but misapplied by most later botanists to N. cordata.
Nymphoides (L.) Ventenat: N. peltata

THE CASE OF "PYRAMIDAL" AND "CONICAL"

Terminology is a matter of continuing importance to everyone concerned with plant science and the applied fields, and while it would seem charmingly appropriate if bouquets were tossed to the stage now and then, the usual comments are more in the nature of brickbats. A rather baffling development in both botanical and horticultural writings is the persistent and even growing use of pyramidal in place of conical. These are not puzzling botanical terms one has to look up in glossaries, but descriptives of ordinary language, familiar to every high-school youngster who has had a few classes in geometry.

A pyramid is a solid figure with three or more flat sides which are triangles and meet at a common point at the apex. The base of a pyramid is a triangle or other plane figure with straight sides. A cone is a solid figure enclosed at the sides by a curved surface depending from a single point at the apex, and the base of a cone is a circle or an ellipse. Webster unbends to the extent of adding that anything more or less like a geometrical cone may be called a cone.

Clearly, pyramidal plants exist only as the result of garden art in the form of shearing, and no plant growing naturally develops a pyramid. All so named are conical or columnar in some degree. It is unfortunate that pyramidal has been incorporated into both scientific and common names for a number of garden plants, as names that are obviously erroneous reflect little credit on either botanists or horticulturists. Many of these names are available for "demotion" from taxonomic rank as the new horticultural code becomes more generally adopted, and it is to be hoped that "pyramidalis" and "pyramidal" can be given up without undue trouble to anyone.

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Hyacinthus azureus - not a Muscari

William J. Dress

Most gardeners who grow any of the smaller spring-flowering bulbous plants at all are familiar with the genus Muscari, the Grape-hyacinths. Except for a few yellowish-flowered species, their flowers are prevailingly of one or another shade of a somewhat somber but attractive blue; white forms of a few are also available. Only slightly less well known is the rather similar Hyacinthus azureus (Fenzl) Baker, which frequently appears in both gardens and catalogues under the name Muscari azureum. Of a paler blue, often called Cambridge-blue, and blooming from a month to two months earlier, it is easily recognizable in the garden, but the superficial resemblance between this species and many of the Muscaris is so great that the average gardener may well wonder where the difference lies. The diagnostic characters reside in the flowers themselves. The following table, together with the figures below, will serve to elucidate these points of difference.

Hyacinthus azureus	Species of Muscari
Uppermost flowers normal, fertile	Uppermost flowers usually sterile
Perianth campanulate, not constricted at the throat	Perianth urceolate or oblong-ovate, constricted at the throat
Lobes of perianth 1/2 as long as the tube, erect or spreading-erect	Lobes of perianth very short, about 1/5 or 1/6 as long as the tube, spreading or recurving
Capsule almost round in cross-section	Capsule sharply 3-angled

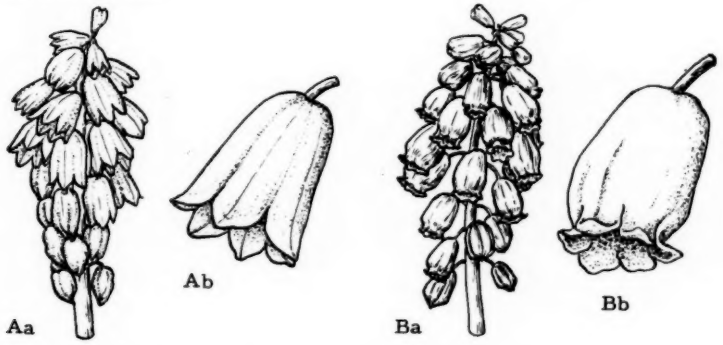


Fig. 9. A, Hyacinthus azureus: Aa, inflorescence, x 1 1/3; Ab, flower, x 4. B, Muscari armeniacum: Ba, inflorescence, x 1; Bb, flower, x 4.

A Proposal for the Conservation of the Name Rechsteineria

H. E. Moore, Jr.

The family Gesneriaceæ has had a resurgence of popularity in recent years as witnessed by the very great interest in Achimenes, Episcia, Kohleria, Saintpaulia, Sinningia and many smaller genera. The genus Gesneria, from which the family takes its name, is sometimes listed in horticultural catalogues, the so-called Gesneria macrantha being most commonly offered. This handsome species with its soft leaves and bright red flowers, however, is a member of another genus that has long been confused with Gesneria, but which may now be referred to as Rechsteineria. The history of this confusion is lengthy and involved. The essential facts, however, are presented here in simplified form. Following them is a detailed analysis that is primarily of interest to the taxonomist but which is printed here so that the information will be available before the meeting of the Eighth International Botanical Congress at Paris in July, 1954.

Gesneria was originally described by Linnæus and is a genus of some 35 species that are found chiefly in the West Indies. It is most easily distinguished from the plants generally cultivated under that name by having alternate leaves and by having fibrous roots rather than a woody tuber. Except for a few species in botanical gardens it is rarely seen in cultivation.

Rechsteineria, on the other hand, is a genus of about 75 species most abundant in Brazil and extending northward to Mexico. Like Sinningia, it has a woody tuber and opposite or whorled leaves. The flowers are generally red or orange-red with a tubular corolla that may have a regular limb or a prominently 2-lipped limb. Very many of the species have been described as Gesneria because of an unfortunate changing about of names by the great German botanist Von Martius in 1829. Today, following prescribed rules, the name Gesneria must revert to its original usage and a selection must be made from seven names available for the genus with tubers.

The earliest names are Allagophylla, Megapleilis, Styrosinia and Tulisma, all proposed by the eccentric American naturalist Rafinesque in a neglected book dated 1836 but actually published in 1837. These names are unfamiliar and have not been used heretofore. Rather than adopt one of them as required by the Internation-

al Code of Botanical Nomenclature it has seemed advisable to recommend the conservation of a more familiar name. Three names are available: Rechsteineria, published by Regel in April, 1848, Corytholoma, and Dircæa, the last two published by Decaisne in December 1848. All have been used in botanical and horticultural literature, but Rechsteineria, being the earliest and one rather widely accepted during this century, has been proposed for conservation. Action on this matter will not become official for some time. Meanwhile Rechsteineria may be used by the horticulturist for the following species cultivated in the United States: Rechsteineria cardinalis (Lehmann) Kuntze (Gesneria macrantha Hort. not G. macrantha Sprengel), R. lineata Hjelmqvist, R. macropoda (Sprague) C. H. Curtis, and R. Warscewiczii (Bouché & Hanstein) Kuntze.

The reader who wishes to follow the complexities of the problem may refer to the following detailed synopsis presented to the International Botanical Congress and reproduced here:

A proposal for the conservation of Rechsteineria Regel (1848) of the Gesneriaceæ versus Gesnera Mart. (1829) non Gesneria L. (1753) nec Gesnera Sw. (1800), Allagophylla Raf. (1837), Megapleilis Raf. (1837), Styrosinia Raf. (1837), and Tulisma Raf. (1837).

Rechsteineria Regel, Flora 31: 247 (1848) [Apr.] nom conserv. prop.

Circumscription: Kuntze, Rev. Gen. Pl. 2: 474 (1891) and Fritsch, in Engler's Bot. Jahrb. 50: 434 (1913).

Type species: Rechsteineria allagophylla (Mart.) Regel.

Size and area: About 75 species centered in Brazil and extending northward to Mexico.

Recognition: Baillon, in Bull. Soc. Linn. Paris 1: 718 (1888); Kuntze, Rev. Gen. Pl. 2: 474 (1891); Fritsch, in Engler's Bot. Jahrb. 50: 434 (1913) and 54, beibl. 119: 36 (1916); Knuth, Initia Flor. Venez. 646 (1928); Curtis, in Gard. Chron., ser. 3, 90: 410 (1931); Söderberg, in Svensk. Bot. Tidskr. 29: 127 (1935); Hjelmqvist, in Bot. Notiser 1937: 295; Pittier, Cat. Fl. Venez. 2: 396 (1947).

Horticultural importance: A number of species of this genus have long been cultivated, for the most part under the name Gesneria or Gesnera. In the Royal Hort. Soc. Dict. Gard. 2: 886 (1951), Chittenden lists 19 species of which a lesser number is actually in general cultivation today.

Discussion: In Nov. Gen. & Sp. Pl. 3: 27 (1829), Martius applied the name Gesnera (as a corrected form of Gesneria) to a group of 12 Brazilian species and referred the two original Linnæan species, G. humilis and G. tomentosa, to the genera Conradia Mart. and Rhytidophyllum (Rytidophyllum) Mart. respectively. The great majority of subsequent writers followed and amplified his concept until the period of 1888 to 1894 when Baillon, Kuntze, and Fritsch restored Gesneria to its original circumscription. Kuntze, Rev. Gen. Pl. 2: 473 (1891), retained Gesneria L. in its broadest sense for a group of West Indian species including both of the original com-

ponents. Fritsch, in Engler & Prantl, Nat. Pflanzenfam. IV, 3b: 183 (1894), and Urban, in Symb. Antill. 2: 369 (1901), restricted Gesneria to include G. humilis L. and close allies and referred G. tomentosa to Rhytidophyllum. Unless rejected in favor of Gesnera Mart. under provisions of Article 57 International Code of Botanical Nomenclature, Gesneria L. must be retained for the group of species including G. humilis L. and another name is required for the genus as circumscribed by Martius. Reasons for not proposing Gesnera Mart. for conservation are discussed with that name in following paragraphs.

Baillon, Bull. Soc. Linn. Paris 1: 718 (1888), noted that Rechsteineria was the earliest name that could be applied to the Brazilian and allied species of Gesnera Mart. but he, like almost all other students, overlooked four prior names of Rafinesque. These names, Allagophylla, Megapleilis, Styrosinia, and Tulisma, appeared in 1837 and, except for the first, have never been recognized. Post and Kuntze, Lexicon Gen. Phanerog. 18 (1904), accepted Allagophylla and reduced the remaining three names of Rafinesque to synonymy along with three later names, Corytholoma (Benth.) Decne., Dircæa Decne., and Rechsteineria Regel. They made no combinations and to accept Allagophylla as a name for the genus on the basis of strict priority would entail the making of new combinations for all but one species and the loss of a more familiar name for a genus of some horticultural importance. Inasmuch as it has been common practice to reject overlooked names of Rafinesque, one of the three later names may be considered for conservation.

Of these names, Rechsteineria has priority by nine months over Corytholoma and Dircæa but, for reasons to be noted, at least Corytholoma merits consideration as a nomen conservandum propositum. Both Dircæa and Corytholoma appeared on the same page of an article by Decaisne and the former was reduced to synonymy of the latter by Fritsch in Engler & Prantl, Nat. Pflanzenfam. IV, 3b: 181 (1894). Under provisions of Article 67, International Code of Botanical Nomenclature, Dircæa need not be discussed further.

A number of arguments may be presented for the conservation of Corytholoma and for that reason the following detailed information is provided:

Corytholoma (Benth.) Decne. in Rev. Hort. 20: 466 (1848) [Dec.].

Circumscription: Fritsch, in Engler & Prantl, Nat. Pflanzenfam. IV, 3b: 180 (1894) and Dalla Torre & Harms, Gen. Siphonog. 477, no. 7887 (1904), equivalent in all respects to the current circumscription of Rechsteineria.

Type species: The genus was based on Gesneria sect. Corytholoma Benth. in Plant. Hartweg. 230 (1846) which included a single species, G. stachydifolia Benth. This species must stand as type of the genus but has not yet been transferred to Corytholoma. Decaisne discussed only those species cultivated in Europe at the time and omitted any direct reference to G. stachydifolia.

Size and area: As for Rechsteineria.

Recognition: Fritsch, in Engler & Prantl, Nat. Pflanzenfam. IV, 3b: 180 (1894); Siebert & Voss, Vilmorin's Blumengärtnerei 1: 787 (1894); Kuntze, Rev. Gen. Pl. 3: 240 (1898); Fritsch, in Bihang till Svensk. Vet. - Akad. Handl. 24, afd. 3, no. 5: 19 (1898); Fritsch, in Engler's Bot. Jahrb. 29, beibl. 65: 18 (1900); Dalla Torre & Harms, Gen. Siphonog. 477 (1904); Fritsch, in Engler's Bot. Jahrb. 37: 497 (1906); Sprague, in Kew Bull. 1908: 20 and in Bot. Mag. 134: t. 8228 (1908); Usteri, Flora der Umgebung

der Stadt São Paulo 238 (1911); Löfgren, Man. Fam. Nat. Phaner. Brazil 485 (1918); Bonstedt, Parey's Blumengärtnerei 2: 401 (1932); Bailey, Hortus 179 (1930) and Hortus Second 209 (1941); Hoehne, Kuhlmann, & Handro, O Jardim Botanico de São Paulo 595 (1941); Lemée, Dict. Desc. Gen. Pl. Phan. 2: 329 (1930) & 8b: 736 (1943).

It will be seen from the above that Corytholoma has been accepted in both botanical and horticultural literature. In its narrowest application, equivalent to a section of the genus as interpreted by Fritsch, it includes a large number of species (ca. 23) while Rechsteineria in a similarly restricted sense applies to only two species. At least three species are currently listed in commerce in the United States and Europe under this name. A total of nine species of primary horticultural interest were listed by Siebert & Voss and by Bailey.

On the other hand, Rechsteineria has priority over Corytholoma. On this basis it was accepted by Fritsch in his later work and has been used by more recent students. All but four species have been formally transferred to Rechsteineria as opposed to Corytholoma in which about thirty new combinations will be needed, including one for the type species. Three species are currently listed in commerce under the name Rechsteineria.

Although Corytholoma has been more widely accepted in horticultural literature than Rechsteineria, both generic names are used for about an equal number of species in general commerce and a similar number of species referable to the genus are listed in catalogues as species of Gesneria. Siebert & Voss and Bailey together listed a total of only nine species of primary horticultural interest while some nineteen were listed under Gesneria as recently as 1951 by Chittenden. There seems to be neither sufficient uniformity of treatment nor sufficient preponderance of horticultural usage to warrant proposing Corytholoma for conservation when one takes into account its lack of priority and the large number of new combinations that would become necessary if it were to be conserved.

Recommendation: A similar discussion under Gesnera points out reasons for not conserving that name and following more recent botanical treatments, Rechsteineria is proposed for conservation.

Gesnera Mart., Nov. Gen. & Sp. Pl. 3: 27 (1829) non Gesneria L., Sp. Pl. 2: 612 (1753) and Gen. Pl. ed. 5: 267 (1754) nec Gesnera Sw., Fl. Ind. Occ. 2: 1015 (1800). nom. rejic. prop.

Type species: not designated.

Size and area: Originally 12 species of Brazil including representatives of all the currently recognized subdivisions of Rechsteineria.

Recognition: DeCandolle, Prodr. 7: 526 (1838) pro max. parte; Endlich., Gen. Pl. 721, n. 4165 (1839); Regel, in Flora 31: 246 (1848); Decne., in Rev. Hort. 20: 465 (1848); Jacques & Herinq, Man. Gén. des Plantes 2: 564 (1850) pro parte; Hanst., in Linnæa 26: 203 (1854); Hanst., ex Mart., Fl. Bras. 8 (1): 349 (1864); Hanst., in Linnæa 34: 236 & 257 (1865); Benth. & Hook. f., Gen. Pl. 2: 1003 (1876); Durand, Ind. Gen. Phan. 302 (1888); Nichols., Ill. Dict. Gard. 2: 65 (1885) pro max. parte; Bellair & St.-Léger, Plant. des Serres 850 (1899); Bailey, Cycl. Amer. Hort. 2: 641 (1901) [Gesneria]; Beddome, in Journ. Roy. Hort. Soc. 33: 87 (1908); Bailey, Stand. Cycl. Hort. 3: 1333 (1915) [Gesneria]; Pittier, Man. Plant. Usual. Venez. 155 (1926); Chittenden, Roy. Hort. Soc. Dict. Gard. 2: 886 (1951) [Gesneria]; Augusto, Fl. Rio Grande do Sul 383 (1946).

Illustrations: About 100.

Discussion: The general history of Gesnera Mart. has been reviewed in prior discussion under Rechsteineria. Under Article 57, International Code of Botanical Nomenclature, Gesnera Mart. might be proposed for conservation versus Gesneria L. (Gesnera Sw.). Martius' concept has been followed by very many writers and has gained wide acceptance botanically and horticulturally. Most of the species now referred to Rechsteineria were originally published as species of Gesneria or Gesnera, the two names having been used more or less interchangeably for over a century.

The reasons for retaining Gesneria in the Linnæan sense and rejecting Gesnera Mart., however, are weighty. Gesneria L., with upwards of 35 species, has been and is now accepted in its original sense by Swartz, Prodr. 89 (1788) and Fl. Ind. Occ. 2: 1015 (1800) [Gesnera]; Baillon, in Bull. Soc. Linn. Paris 1: 717 (1888); Kuntze, Rev. Gen. Pl. 2: 473 (1891); Fritsch, in Engler & Prantl. Nat. Pflanzenfam. IV, 3b: 183 (1894); Urban, Symb. Antill. 2: 369-383 (1901); Dalla Torre & Harms, Gen. Siphonog. 477, n. 7891 (1904); Boldingh, Flora Ned. West. Ind. 366 (1913); Urban, Symb. Antill. 8: 646 (1921); Britton & Wilson, Bot. Porto Rico 2: 204 (1925); Barker & Dardeau, Flore d'Haiti 343 (1930); Morton ex Standley, Flora Costa Rica 1177 (1938); Moscoso, Cat. Fl. Doming. 588 (1943). To reverse the widespread acceptance of Gesneria L. during the past 60 years would have adverse and far-reaching consequence in floristic work.

In horticulture, the name Gesneria has become confused and has been attached to species of such genera as Kohleria and Smithiantha. It has been supplanted in part by both Rechsteineria and Corytholoma. Inasmuch as very few species of Gesneria L. are cultivated, and those primarily in botanical gardens or special collections, abandonment of the name as it has been used in horticulture and the substitution of one more clearly circumscribed would tend to eliminate confusion in the naming of species more widespread in cultivation with eventual stability of nomenclature in horticulture.

Allagophylla Raf., Fl. Tellur. 2: 33 (1836) [1837] as Alagophyla, nom. rejic. prop.

Type species: A. dasyanthes Raf. based on Gesnera allagophylla Mart. [as Martens].

Size and area: Monotypic in Brazil as interpreted by Rafinesque.

Recognition: Post & Kuntze, Lexicon Gen. Phanerog. 18 (1904) where interpreted in a broad sense comparable to the present circumscription of Rechsteineria with Corytholoma, Dircæa, Megapleilis, Rechsteineria, Styrosinia and Tulisma reduced to sectional status or synonymy.

Discussion: Under Article 67, International Code of Botanical Nomenclature, the action of Post & Kuntze presumably makes the rejection of other Rafinesque names unnecessary if Allagophylla is rejected and the present circumscription is maintained. Although this is the earliest name for the genus, new combinations for all but one species would be necessary if it were accepted and an unfamiliar name would replace one now known in botany and horticulture.

Megapleilis Raf., Fl. Tellur. 2: 57 (1836) [1837], nom. rejic. prop.

Type species: M. tuberosa Raf. based on Gesnera bulbosa Ker-Gawl.

Size and area: Monotypic in Brazil as interpreted by Rafinesque.

Recognition: Reduced to synonymy of Allagophylla by Post and Kuntze.

Styrosinia Raf., Fl. Tellur. 2: 95 (1836) [1837], nom rejic. prop.

Type species: S. coccinea Raf. based on Gesnera aggregata Lindl. and G. pendulina Lindl. which he considered synonymous following Hooker in Bot. Mag. 54: t. 2725 (1826).

Size and area: Monotypic in Brazil as accepted by Rafinesque.

Recognition: Reduced to synonymy of Allagophylla by Post & Kuntze.

Tulisma Raf., Fl. Tellur. 2: 98 (1836) [1837], nom. rejic. prop.

Type species: T. verticillata (Hook.) Raf. based on Gesneria verticillata Hook.

Size and area: Monotypic in Brazil as interpreted by Rafinesque.

Recognition: Reduced to synonymy of Allagophylla by Post & Kuntze.

A NEW BOOK FROM NEW ZEALAND

Though the "Handbook of Bulbs and Perennials for the Southern Hemisphere" is intended for the general gardening public of New Zealand and Australia, climatic conditions of those lands are hardly approximated here except on the Pacific Coast, and so its appeal in America will be to the more advanced horticulturist or specialist rather than to the average gardener. About 260 genera are discussed briefly, with cultural notes and special references to important species. Rock and alpine plants, as a group, have been deliberately omitted. Fanciers of bulbous and similar plants will find this book of interest, perhaps, for a good many species seldom met with in American works or catalogues, as well as the old stand-bys, are illustrated and discussed (species of Arthropodium, Bravoa, Bulbinella, Dipidax, Dierama, Eucomis, Ostrowskia, Urceolina, Xeronema, for instance); many are desirable as cool-greenhouse subjects in this country.

The author, Richmond E. Harrison, is a native New Zealander and has been a nurseryman since 1920, having grown and worked with a wide variety of plant material suitable to that region. The book contains 208 double-column pages of text, and is copiously illustrated with half-tones and color-plates. The former, though often of poor definition, are generally better than the latter, which are mostly of the type to be found in nursery catalogues. The handbook is published by R. E. Harrison and Co., Ltd., Palmerston North, New Zealand. The price quoted is 36 shillings.

Crete Dittany (Amaracus Dictamnus) and its Relationships

G. H. M. Lawrence

Many discerning herb-fanciers of the country know the Crete Dittany, a half-hardy perennial of the mint family (Labiatæ). It has procumbent stems, bearing small, broadly ovate to orbicular white-woolly leaves, and small pink flowers in a congested, large-bracted, spike-like inflorescence that resembles small hops. A few erect flowering branches are shown in the habit of fig. 11.

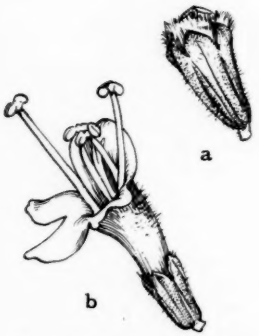


Fig. 10. Origanum vulgare: a, calyx, x 7; b, flower, x 4.

The Latin name of the plant is Amaracus Dictamnus (L.) Bentham. Amaracus is from the Greek "amaros," meaning "bitter," in allusion to the bitter flavor of the plant. The specific epithet, Dictamnus, is an old generic name (of a genus of Rutaceæ) used by Linnæus. Many plantsmen know Crete Dittany better as Origanum Dictamnus, others know it as Amaracus tomentosus. The genus Amaracus was recognized nearly 150 years ago and set apart by Gleditsch of Berlin. George Bentham, the British botanist, monographed the accepted Amaracus as a valid genus. It is distinguished from Origanum by its calyx and its corolla, as well as by characters of the stamens. These are tabulated below for aid in comparison:

	Amaracus (fig. 11)	Origanum (fig. 10)
Calyx:	with one large lobe and 2 small blunt tooth-like lobes	with 5 more or less equal lobes
Corolla:	much constricted at base and with a swollen pouch along lower side	slightly constricted at base and lacking any pouch
Stamens:	about 1-1.5 cm. long, the anther-sacs spreading and pointing upward	about 0.5 cm. long, the anther-sacs spreading and turned downward

Characters of the inflorescence vary with the species in each genus, as do those of foliage. Some species of Amaracus grow erect, and habit is of little help in separating the genera.

The Crete Dittany is one of two cultivated species of Amaracus. The second, A. sipyleus (L.) Briquet, is a glabrous species of erect habit growing to about 6 dm. in height. There is also cultivated a hybrid between these two, A. hybridus (Mill.) A. K. Jackson, which is often misidentified as A. Dictamnus, and which differs from A. Dictamnus in the leaves larger (to 3 cm. long), the herbage stellate-hairy to pilose (not woolly), and in the habit more abundantly branched. In the Crete Dittany the large orbicular bracts beneath each flower, that contribute to the hop-like appearance of the inflorescence, turn rose-purple after flowering.

Amaracus Dictamnus makes a pleasant pot-subject and is sometimes used in window-boxes and hanging baskets. It retains its attractive fruiting heads many weeks and the white-woolly silvery foliage contrasts with them in a pleasing manner. The plant is native in the mountains of southern Greece southward to Crete. It is reported hardy as far north as Philadelphia and in the Pacific Coast area. More information, however, is desired on its limits of hardiness in this country.

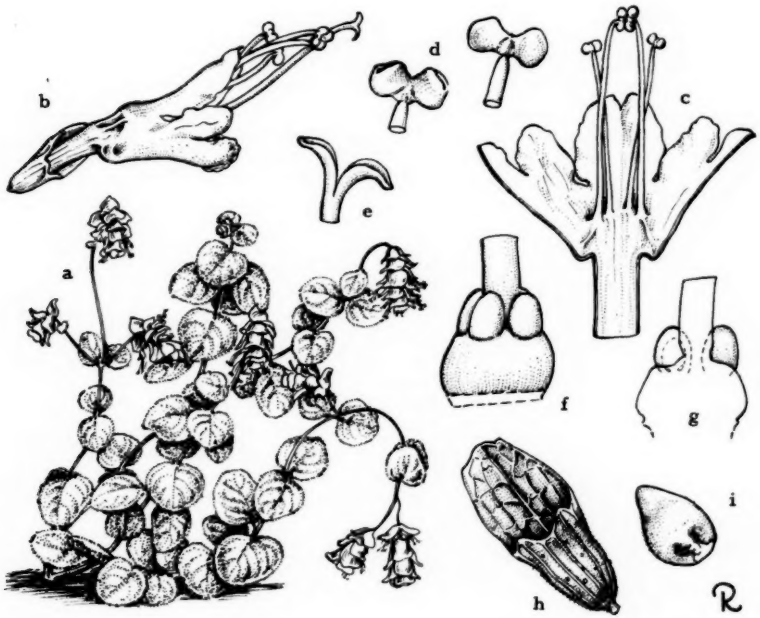


Fig. 11. Amaracus Dictamnus: a, habit, x 1/3; b, flower, x 3; c, corolla expanded, x 3; d, anthers, x 11; e, stigmas, x 16; f, base of pistil, x 20; g, same in vertical section, x 20; h, mature calyx, x 5; i, nutlet, x 8.

Three Recent Books on Wildflowers - A Review

G. H. M. Lawrence

From among several recent books of color plates and text on the subject of wild flowers, three are selected here for review, and represent as many levels of coverage and excellence. Each depends on its own set of 200 or more reproductions of water colors as its pièce de résistance, accompanied by a descriptive text. Each has its place on the shelf of wild flower literature. For those who can afford only one such item, perhaps this brief review may be helpful.

In 1929 the public learned of the completion of publication of 2000 sets of a sumptuous work, "Wild Flowers of America," from paintings by Mrs. Mary Vaux Walcott, and available for $100 for a portfolio of 400 plates (or $500 for the same in a deluxe edition). Nearly a million dollars was spent in its production; publication was by the Smithsonian Institution, Washington, D. C. Recently these same water colors (augmented by 20 by Dorothy Falcon Platt) have been reproduced by the printers of the original portfolios and placed on the market as a single volume by Crown Publishers, at a price of $10. The text preceding the plates has been prepared by Dr. H. W. Rickett, botanist and bibliographer at the New York Botanical Garden. Persons familiar with the justly renowned plates of the original Walcott portfolio of wild flowers (or the smaller one of pitcher-plants) will find those of the present edition disappointingly inferior in color rendition. The coloring is muddy, lacks snap and vitality, and infrequently is so far "off" as to be misleadingly inaccurate. The work of Mrs. Walcott is more to be appreciated for its artistic merit and its production of an effect than for draftsmanship, meticulousness, and regard for botanical detail. In these matters, the plates of the book in question cannot be expected to be improvements upon the originals.

[1]Walcott, M. V., Platt, D. F. and Rickett, H. W. Wild Flowers of America. 71 pp., 400 col. pl., quarto. Crown Publishers, New York, 1953. $10.00.
Johnston, Edith F. & Hylander, C. J. The Macmillan Wild Flower Book. 480 pp., 182 col. pl., quarto. The Macmillan Company, New York, 1953. $15.00.
Jennings, O. E. & Avinoff, A. Wild Flowers of Western Pennsylvania and the Upper Ohio Basin. 2 vols., 574 pp., 200 col. pl., quarto. University of Pittsburgh Press, 1953. $60.00.

The scope of the work is considerable. Not only does it include plants lacking true flowers (e.g., conifers) but many trees and shrubs not ordinarily considered wild flowers. Readers of the Pacific Northwest and adjoining regions will find many familiar subjects, for no less than a fourth of the plants depicted are native only there. Nearly 50 others occur only in the Southeast, with about half as many from the Southwest. No other American book on wild flowers covers so extensive an area and yet it is unbalanced in other respects. For example, of scores of well-known asters only 3 are treated, of the cacti only 3, of the goldenrods 2, and of the following genera, none of the included species are native in the East: Saxifraga, Anemone, Erigeron, Hypericum, Mimulus. Many genera which include numerous American species are completely unrepresented: Coreopsis, Chrysopsis, Dentaria, Gerardia, Heuchera, Hieraceum, Liatris, Lysimachia, Polygonatum, Rhexia, Veronica are a few examples. The average user will regret, for the utility expected of a book about wild flowers, that Miss Platt's supplemental paintings - and many are of greater excellence than those by Mrs. Walcott - were not increased to account for some of these conspicuous omissions. Plates by Mrs. Walcott of pawpaw, buffalo-berry, tulip-tree, willow, juniper, alder, and maples, to mention a few, could well have been rejected as not representing outstanding wild flowers and in their place new plates might have been prepared of more widely-known plants. In my opinion the Walcott book has more merit as a collection of rather poorly reproduced flower portraits than as a one-volume reference work on North American wild flowers.

The second work, only slightly more costly, is "The Macmillan Wild Flower Book." It is clear that this book was conceived and executed to serve as a reference work of reasonable scope and coverage for North American wild flowers. The 232 color plates, from water colors by Mrs. Edith Farrington Johnston, treat plants of 256 genera and 403 species. Mrs. Johnston, born and trained in Colorado and now residing in Florida, is also the author of "Strange Visitor," an illustrated book on the praying mantis. The text of "The Macmillan Wild Flower Book" was prepared by Dr. Clarence J. Hylander, describes about 495 species and includes 42 genera not represented by the color plates. Dr. Hylander, formerly Professor of Botany at Colgate University, later Executive Secretary of the American Institute of Biological Sciences, is now with the Office of Technical Information, U. S. Army. An analysis of the distribution of the species represented by color plates shows that nearly two-thirds are native east of the Mississippi river. Western wild flowers, especially of the Pacific coast, are conspicuously absent, as are those of the more arid areas of the Southwest. To a less extent this deficiency applies also to the Florida peninsula and adjoining areas.

The art work reflects a fine understanding of botanical structures and an appreciation of the need for accuracy in plates designed to

serve as aids in identification. Features of the plants are more sharply defined and were drawn with greater precision than were those by Mrs. Walcott. The color reproduction work leaves something to be desired, especially in the rendition of greens (which frequently are much too blue), in the yellows (which too often are muddy and lack brilliance), and in the reds (where those of the cardinal flower, for example, fall short of reality). On the credit side, this assemblage of plates is much more satisfactory as a reference work by which to identify a majority of eastern American wild flowers than any other known contemporary volume.

The third work, "Wild Flowers of Western Pennsylvania and Upper Ohio Basin," a limited edition of 3000 copies, contains 200 plates of water colors. As a general treatise on wild flowers its restricted scope provides a limitation almost as great as its price ($60). The text of this two-volume work was written by a well-known and highly respected botanist, Dr. O. E. Jennings, and is a text for botanists. It is a scholarly flora of the flowering plants of the region, complete with keys and descriptions of all species of the circumscribed area. As a regional flora it ranks with the best and is a model for successors.

This review is concerned primarily with the second of the two volumes: a volume I believe to be one of the best productions of botanical color work manufactured anywhere - an outstanding example of botanical artistry and of the skill of the gravure craftsman; a volume that would have been possible only at many times the present and unmodest price, had its manufacture not been heavily subsidized by the Buhl Foundation; a volume destined to become a classic of its kind.

The 200 plates of this volume show 253 plants, each reproduced life-size; when of a plant with small flowers, a welcome enlarged detail-insert is added. The art work is from the brush of Andrey Avinoff (1884 1949), a Russian-born artist and scientist, who in 1917 was in Pittsburgh on a purchasing mission for his country when the Tsarist regime fell. He remained in that city and in 1926 became Director of the Carnegie Museum, rising to that position from Associate Curator of Entomology in the museum. The paintings were made from fresh material, collected for him by Professor and Mrs. Jennings. Each of the plates is faced with a descriptive legend written by Dr. Jennings.

This wild flower book, of limited scope, but unsurpassed for the excellence of its contents, is as much a connoiseur's item as a botanist's tool. It is too costly for the average flower-lover to own, but deserves a place in every public library and every botanical and horticultural center.

In each of these works the plants are arranged (with a few exceptions) in accordance with the well-known Engler system of classification. None provides adequate synonymy although the nomenclature of "The Macmillan Wild Flower Book" and of Jennings' work

follows Fernald's "Gray's Manual of Botany" (1950) for plants of the Northeast. The index of the Macmillan work is frustrating because of its omission of references to the plates, nor are the latter listed in a table of contents. Each of the one-volume works provides devices (keys, tables) designed to enable the user to identify the plants illustrated, but not to identify any wild flower of a given region. This reduces the utility of such devices and renders them dangerous to the tyro who will not know if a flower in hand is included in the treatment. Only the Jennings work provides author citations for the Latin names. The decapitalization of generic names in the index of the Walcott book is a barbarism, in the guise perhaps of modernism; one wonders why the adjectives of some vernacular names in the same index were capitalized. The failure to group together treatments of species of a given genus in the texts and the plate arrangement of these one-volume works are most annoying and may cause a reader to miss a desired entry, thinking it omitted. Not one of the authors defines his concept of a wild flower, and the challenge is here raised as to the inclusion of conifers and catkin-bearing trees or those with insignificant-appearing flowers within the usual concept of the term.

In summation, this reviewer will invite the attention of persons only of aesthetic and artistic inclination to the Walcott book, with apologies for below-average color reproduction; of botanists, and of connoisseurs of the finest in art gravure, to the Jennings-Avinoff classic; and of the average amateur and plantsman interested in knowing wild flowers to "The Macmillan Wild Flower Book."

HOUSE PLANT SOURCES - ADDITIONS

Several readers have directed attention to sources for house plant material additional to those listed in the December number of "Baileya" [Vol. 1, p. 117]. Those additions in the United States include:

Alberts & Merkel Bros., Rt. 6, Box 77T, Jacksonville, Fla.
Castles of Florida, 1060 Terrace Blvd., Orlando, Fla.
Logee's Greenhouses, Danielson, Conn.
Oakhurst Gardens, 345 W. Colorado St., Arcadia, Calif.
Gordon T. Shigeura, 284 Pohakulani St., Hilo, Hawaii
Terrace View Gardens, Greencastle, Ind.

Three sources in England of interest to American importers and to British readers are:

Elm Garden Nurseries, Church Lane, Claygate, Surrey
C. Funke & Son, 79 Craigwell Ave., Feltham, Middlesex
Thomas Rockford & Sons, Ltd., Turnford Hall, Nr. Broxbourne, Herts.

RECENT INTRODUCTIONS [continued from page 13]

orange, pale yellow and ivory or greenish-white with maturity. The second, A. Reitzii, so named by the recent monographer of the genus, G. W. Reynolds, in 1937, differs from the first in the more spreading, straighter leaves and the much longer curved flowers. It is described also as late-flowering. The perianth of each flower of A. Reitzii is bright scarlet above, turning to lemon-yellow beneath. The species was named for F. W. Reitz, nephew of a one-time Minister of Agriculture.

Tristania lactiflua is a tree to 10 m. high, with milky sap, ovate to ovate-lanceolate leaves to 1.5 dm. long, and very numerous small white flowers in glaucous-pubescent axillary cymes, the latter mostly 3-7 cm. long. The genus is allied to Eucalyptus.

ERRATA IN VOLUME I

Page 65, line 30: read "1789," not "1879."

Page 65, line 38: read "10 years," not "20 years."

Page 87, line 22: the name of the commonly cultivated Chinese Evergreen in Aglaonema modestum, not A. simplex [of which A. acutispathum is a synonym].

Page 112: an unfortunate error was made in pasting up the key to the cultivated Elæocarpaceæ. The lines concerned are reproduced below, in corrected form:

4. Fls. white; ovary sparsely hairy; lvs. ovate-lanceolate. . . C. Patagua

1. Petals strongly imbricate in bud, fls. with a weak disk; fr. a berry.

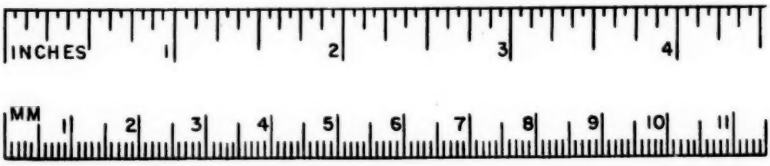
5. Lvs. symmetric; ovary 3-4-locular, seeds 2 per locule. . . . Aristotelia

6. Blades of lvs. leathery, 2.5 cm. long or less. . . . . A. fruticosa

ABBREVIATIONS USED IN BAILEYA

[Excluding abbreviations of author's names following binomials etc.]

ann.	annual	dm.	decimeter	lf.	leaf
bien.	biennial	fl.	flower	lft.	leaflet
br.	branch	fls.	flowers	lvs.	leaves
brt.	branchlet	flt.	floret	mm.	millimeter
caps.	capsule	fr.	fruit	per.	perennial
cl.	clone	ft.	foot	segm.	segment
cm.	centimeter	hort.	horticultural	st.	stem
cv.	cultivar	in.	inch	sts.	stems
diam.	diameter	infl.	inflorescence	var.	variety

METRIC - ENGLISH EQUIVALENTS (approximate)

6 mm. - 1/4 in.	10 cm. - 4 in.	10 mm. - 1 cm.
12 mm. - 1/2 in.	1 dm. - 4 in.	10 cm. - 1 dm.
25 mm. - 1 in.	3 dm. - 1 ft.	10 dm. - 1 meter
2.5 cm. - 1 in.	10 dm. - 1 yd.	
5 cm. - 2 in.	1 m. - 39 in.